# BOBCATS & Eagles & Bats, oh my!

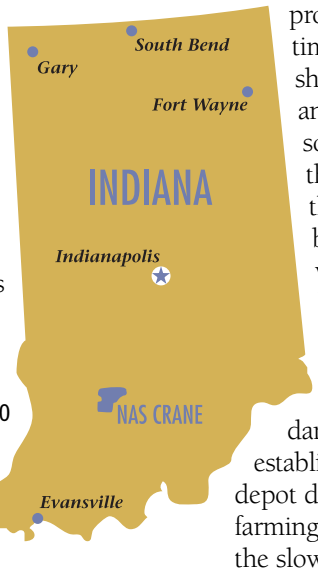
## CRANE'S FORESTS PROVIDE HABITAT & GENERATE FINANCIAL RESOURCES FOR THE NAVY

The 62,000 acres of land at Naval Support Activity (NSA) Crane, IN generate financial resources for the Navy while providing the necessary habitat for several endangered or threatened species including the bobcat, bald eagle and Indiana Bat.

Photo by Merlin D. Tuttle,
Bat Conservation International

Photo by Steve Maslowski,
U.S. Fish and Wildlife Service

What makes NSA Crane (Crane) so unique is its stewardship of so many acres of land. Of Crane's 62,000 acres, approximately 52,000 acres are forested and have the largest value of standing timber in the Navy. Initially, the primary purpose of most of this forested land was to act as a buffer or safety zone for the materials stored and activities of the tenants. However, Crane's Natural Resource and Forestry Programs has brought high visibility to the site, awards for program excellence, as well as visits from senior Navy officials.




Crane is almost 100 square miles in area. By comparison, Washington, D.C. is only 61 square miles.

## HISTORY OF THE LAND

Around 1819, the Euro-Americans settled near what is now Crane and began the commercial exploitation of natural resources such as timer, bog iron, stone and coal. The opening of the Milwaukee railroad through the area permitted intensive development of timber resources and provided the backbone of the local economy until 1900, when the timber resources were depleted. Since the land was not suitable for farming, a large portion of the land was abandoned and settlers moved from the area. About the same time, the United States Department of Agriculture proposed the White River Land Utilization Project in which they planned to acquire 32,000 acres of the poorest land and restore its forest productivity and establish a state forest. As a result, Lake Greenwood was constructed, thousands of trees and shrubs were planted, and erosion control structures were built as part of the White River Project.

The Navy procured the White River Project lands in 1940, when conditions leading up to World War II convinced Congress that a large inland loading facility for ammunition production was needed. At this time, the land was still in terrible shape, almost all the timber of any value had been cut and the soils were heavily eroded due to the persistent attempt to farm the land. Animals such as deer, beaver, grouse and wild turkey were gone, since their forest habitat had been destroyed. Construction of an ammunition depot under wartime pressures did additional damage to the land. However, establishment of the ammunition depot did protect the land from farming and allowed nature to begin the slow process of healing the land. The Navy's commitment to conservation and protection of the land has also steadily increased.

## MANAGING ONE OF NATURE'S FEW RENEWABLE RESOURCES

Forests in any region are a wonderful sight, whether the Great Northwoods, the Cypress swamps of the south, the Temperate Rainforests of the Northwest, the Giants of the West Coast, or the breathtaking sights of the Rockies bursting with the golden colors of aspen. No matter what region, it is easy to see that the forest is home to an endless amount of creatures. Among other functions, forests filter water, clean the air, provide oxygen, and cool the air. Currents magazine couldn't be published without the forest to produce paper.

Forests provide products including lumber, furniture, paper, and pencils. Asphalt, adhesives, paint, cosmetics, chewing gum and toothpastes. Even pet foods contain products derived from the forest. Humans, while spending very little time in the forest, depend on it more than any other species. Humans use an average of 3.5 pounds of wood products per day from office paper to the evening newspaper. Even eating dinner at the family oak dining set in the house made of loblolly pine is due to the productivity of the forest. Wood is plentiful and the most renewable raw material on earth.

## TIMBER MANAGEMENT PROGRAM

The job of a forester is to be a steward of this renewable resource, walking daily through the forest to assess the

## *Crane* BY ANY OTHER NAME

As part of the Navy's realignment and establishment of the Navy Region Midwest (effective 17 June 2004) the host activity of Crane was renamed as the Naval Support Activity Crane (NSA Crane) and is now responsible for the management of all real property and structures. The names of two major mission tenants, the Naval Surface Warfare Center (NSWC Crane) and the Crane Army Ammunition Activity (CAAA), remain unchanged.

NSWC Crane's focus is the acquisition and Fleet support of electronics, ordnance, and electronic warfare products and systems. CAAA's mission is to receive, store, ship produce, renovate and demilitarize conventional ammunition and related components.

For more information about NSA Crane's tenant activities, visit www.crane.navy.mil.

A waterfall nestled within the forests at Crane.

health and vigor of trees. The foresters at Crane are no exception. Much like thinning an onion patch, foresters thin the forest to eliminate trees that are on the decline in favor of younger, more vigorous trees. This thinning is a very long and arduous process, especially with a program the size of Crane's. A process, while rooted in the science of a forestry degree could be construed as more of an art. The goals of Crane's timber management program are to:

- Preserve and protect the forest and all its associated qualities,
- Restore and maintain species diversity, and
- Produce high quality hardwood sawtimber.

## HARVESTING/THINNING PROCESS

The process at Crane begins with an inspection and inventory of all 1,255 forest stands that divide the 52,000

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acres. (NOTE: A forest stand is "a contiguous group of trees sufficiently uniform in species composition, arrangement of age classes, site quality, and condition to be a distinguishable unit." Subdividing groups of trees into stands based on similar characteristics allows Crane's foresters to better track the status of each particular subdivision and develop and execute customized management plans for each stand.) This is done every ten years and consists of evaluating the need of each stand—whether it is in need of thinning or regenerating. A plan such as this has been completed every decade since the late 1950's, the last of which was completed in 2001.

If a forest stand needs some sort of harvest then the style of harvest is determined. If many young trees are present to carry on the next generation, then thinning is recommended. If the stand is deteriorating with many dead and dying trees, a technique called group selection is used. These openings allow tree species that are incapable of growing in the shade of the forest canopy to get the necessary sunlight to grow from a seedling into a sapling. Within 30 years these trees should grow to a poletimber sized tree. If the stand is growing well or has been harvested in the last 20 years, then the stand is left alone, adhering to the 30-year rotational pattern the plan specifies. Other reasons for leaving a stand untouched is for riparian or wetland management habitat that is valuable to the Indiana Bat, Crane's only resident on the federal endangered species list. Areas are also set aside and managed as old growth, so that there will always be areas in which certain delicate species will be preserved. These areas of forest,

Indiana Bat.
Photo by Merlin D. Tuttle, Bat Conservation International

Looking up the trunk of a shagbark hickory tree shows the flaking bark that the Indiana Bat likes to crawl up under for protection during the summer months.

Terry Hobson, Crane's Forestry Program Manager, surveys the volume of a tree during a forest inventory.

unmanaged for timber resources, total over 7,000 acres or nearly 14 percent of the total forestland at Crane.

Once it is determined what stands are in need of harvesting, the location of these stands are input into the forestry geographic information system (GIS) database and a yearly harvest schedule is planned for the next ten years based on compartments (or regions) throughout the 100 square miles of Crane.

The next step is to evaluate the stands due for harvesting in that particular year, which usually averages approximately 1,500 acres. This process requires the forester to enter into the woods and individually assess each tree within the stand and mark those in need of harvesting. This ensures that a scientific evaluation has occurred for every tree that is harvested, and with a yearly average of nearly 15,000 trees harvested, one can see how this is a long, arduous process. The amount of timber removed annually from Crane never exceeds the annual growth.

The volumes and species of trees are assessed and entered into a table to estimate volumes per species such as white oak, red oak, sugar maple, white ash, and hickory. The sales are organized, valued and given to the base contracts office for formal bidding. A sealed bid sale is then advertised and the timber is sold to the highest bidder. Normally, local contractors harvest the timber the old fashioned way- trudging through the forest with a chainsaw.

*The amount of timber removed annually from Crane never exceeds the annual growth.*

At this point, the Crane foresters ensure that the harvesting process is completed with the utmost care. Streams are to be protected, soil compaction limited and any damage that has occurred must be fixed. The logging trails are then seeded back to vegetation to prevent soil erosion and the stand is ready to grow for another 30 years until the next forester comes along to assess the situation.

The thinning/harvesting process, though long and time consuming, is necessary to ensure the stability and health of forests for generations to come. With many dangers threatening forests such as clearing, urban sprawl and devastating fires, it is becoming more and more important to understand how to keep this wonderful ecosystem viable and productive.

## BENEFICIARIES OF TIMBER SALES

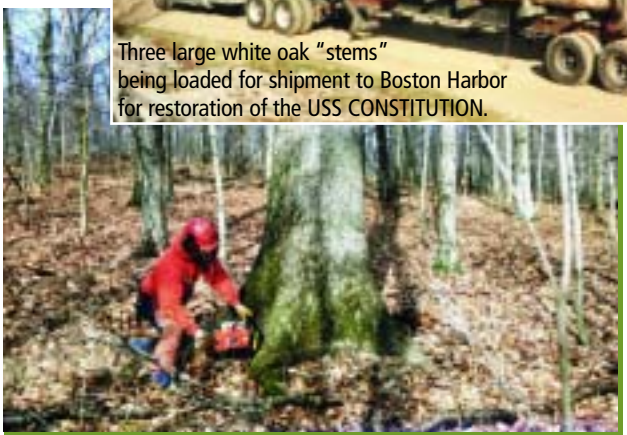
Fifty percent of the Navy's income comes from Crane's timber sale—more than twice as much as the next largest Navy contributor.

Furthermore, Crane returns 40 percent of the forestry profits to local county government. Checks from timber sales are presented yearly and amounts are proportionate to the acreage of each county that Crane occupies. The remaining 10 percent of profit is reinvested in the land in the form of reforestation projects, timber stand improvements, and forest fire protection.

## SIGNIFICANCE OF CRANE'S CONSTITUTION OAK GROVE

Located near the shelter house on the road to the campgrounds is a monument that marks the grove that supplies very special timber. Crane provides the white oaks necessary to supply planking for repair work on the USS CONSTITUTION—the oldest and only wooden ship in the Navy.

Three large white oak "stems" being loaded for shipment to Boston Harbor for restoration of the USS CONSTITUTION.



A sawyer notches and wedges a large White Oak in preparation for final cut.

## THE RECONSTRUCTION OF THE USS CONSTITUTION — *"Old Ironsides"*

The USS CONSTITUTION was one of six frigates authorized for construction by an Act of Congress in 1794 and launched in 1798. Built in Boston, MA the USS CONSTITUTION was made of approximately 2,000 resilient live oak trees. Its planks were up to seven inches thick.

It was during the historic fight with the British Ship HMS GUERRIERE on 19 August 1812, when the British saw that their shot seemed to rebound harmlessly off the CONSTITUTION's hull. As a result she was given the nickname "Old Ironsides". The CONSTITUTION's wartime service ended in 1815, but she is widely recognized for having played a glorious part in the defense of our country and our naval heritage. After six years of extensive repairs, she returned to duty as a flagship of the Mediterranean Squadron. She sailed back to Boston in 1828.

After an examination in 1830, the CONSTITUTION was found unfit for sea duty, but the American public expressed great indignation at the recommendation that she be scrapped. Congress passed an appropriation for reconstruction and in 1835 she was re-commissioned, served as a flagship in the Mediterranean and the South Pacific, and made a 30-month voyage around the world beginning in 1844. In the 1850's, she patrolled the African coast in search of slavers, and during the Civil War served as a training ship for midshipmen.

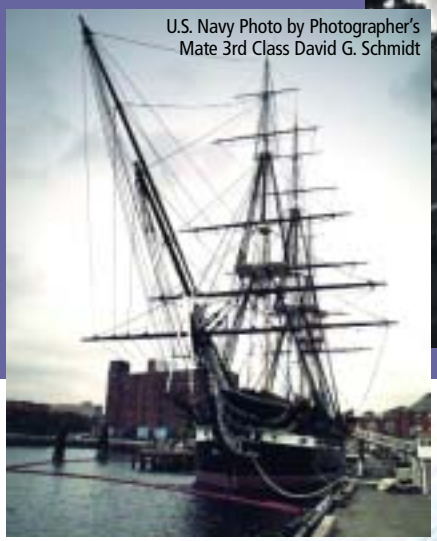
In 1905, public sentiment saved her once again from scrapping. In 1925 she was restored, through donations of school children ($148,000 (much of it in pennies)) and other patriotic groups. In 1941, she was placed in permanent commission, and an Act of Congress in 1954 gave the Secretary of the Navy responsibility for her upkeep.

On 26 September 1995, "Old Ironsides" floated out of dry-dock in the best shape she had been in over 180 years. On 21 July 1997, the USS CONSTITUTION sailed under her own power into Massachusetts Bay for the first time in 116 years and celebrated her 200th birthday.

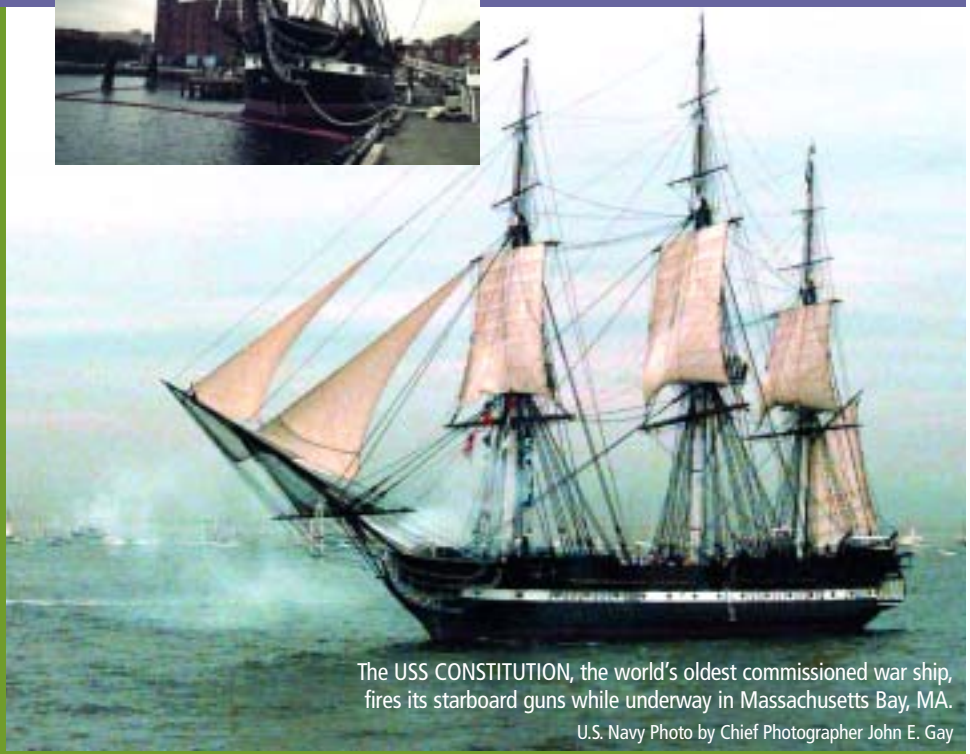
The USS CONSTITUTION is home ported in Boston and tours are conducted daily. For more information visit: www.constitution.navy.mil or www.chinfo.navy.mil/navpalib/ships/constitution/iron-hist.html.

Starboard view of the USS CONSTITUTION with its 12 million dollar, five year overhaul complete, thanks in part to of white oak planking provided by NSA Crane.

U.S. Navy Photo by Photographer's Mate 1st Class Alexander C. Hicks Jr.



U.S. Navy Photo by Photographer's Mate 3rd Class David G. Schmidt



The USS CONSTITUTION, the world's oldest commissioned war ship, fires its starboard guns while underway in Massachusetts Bay, MA.

U.S. Navy Photo by Chief Photographer John E. Gay

Crane uses a GIS unit to keep track of unusually large, high quality white oak (Quercus alba) trees within the woods and have locations of 96 trees in the database. There are many types of white oak (post oak, chinquapin oak, burr oak), but today only the true white oak is used for the restoration of the USS CONSTITUTION. The size and quality of white oak planking needed would be very expensive and hard to locate from commercial sources. Since 1994, a total of 78 trees have been sent to Boston for refurbishment of the USS CONSTITUTION.

## WILDLIFE DIVERSITY FLOURISHES

Because of the predominance of forest, Crane forest management drives all other natural systems. As a result of a sound natural resource management program, Crane's efforts to restore the natural habitat to these lands have been very successful.

Wildlife research is carried out on Crane by several agencies and two universities that use the land as an outdoor laboratory for wildlife students working on advanced degrees. Since 1971, Purdue University has conducted a Christmas Bird Count and over the past 20 years approximately 100 species of birds have been recorded. Furthermore, Crane has participated in the Monitoring Avian Productivity and Survivorship (MAPS) Program since 1994. MAPS is a cooperative effort among public agencies, private organizations, and the bird banders of North America to provide critical, long-term data on population and demographic parameters for target land bird species.

## BOBCATS & EAGLES & BATS

The bobcat, bald eagle and Indiana Bat are three species on the federal/state endangered and threatened lists that inhabit Crane's forests.

The bobcat, a state endangered species, has been seen foraging in the areas where harvesting has been done. The flush vegetation, such as briars and small underbrush resulting from a harvest provides habitat for rodents and small birds—main food items for the bobcat. This moderate-sized member of the cat family is carnivorous. Mating generally occurs in early spring and the average litter of three kittens is born in April or May. Man is the bobcat's worst enemy. A common misconception is that bobcats are predators. In fact, bobcats are beneficial predators, preying primarily on rats and mice. Bobcats prefer remote areas so interaction with humans is relatively rare. In December 1998, the Division of Fish and Wildlife's Nongame and Endangered Wildlife Program began a study in south-central Indiana to determine the abundance and distribution of bobcats.

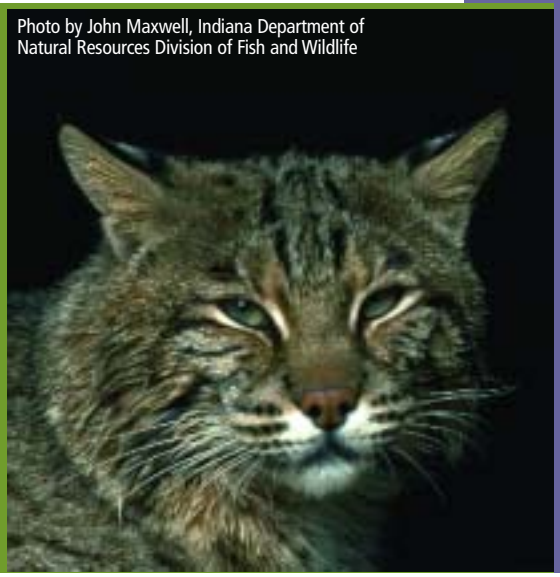


Photo by John Maxwell, Indiana Department of Natural Resources Division of Fish and Wildlife

### THE BASICS ABOUT THE *Bobcat*

Species Name: Bobcat *(Felis rufus)*
State Status: Endangered
Installation(s): NAS Crane, IN
Critical Habitat Designated? No
Protective Measures: None specified. In coordination with Indiana's Division of Fish and Wildlife, Crane notifies when timber sales have been completed to allow biologists to set traps and place radio collars on bobcats for tracking purposes.

### THE BASICS ABOUT THE *Bald Eagle*

Species Name: Bald Eagle *(Haliaeetus leucocephalus)*
Federal Status: Threatened
Installation(s): NAS Crane, IN and lower 48 States
Critical Habitat Designated? No
Protective Measures: None specified.

Photo by John Maxwell, Indiana Department of Natural Resources Division of Fish and Wildlife

## THE BASICS ABOUT THE *Indiana Bat*

Species Name: Indiana Bat *(Myotis sodalis)*

Federal Status: Endangered

Installation(s): NAS Crane, IN

Critical Habitat Designated? Yes. Crawford and Greene Counties, IN, as well as LaSalle County, IL; Carter and Edmonson Counties, KY, Crawford, Franklin, Iron, Shannon, and Washington Counties, MO; Blount County, TN; and Pendleton County, WV.

Protective Measures: In cooperation with the Indiana Department of Natural Resources, Crane's protective measures include:

- No harvesting between the dates of April 15 and September 15;
- No management within 50 feet of an intermittent stream or 100 feet of a perennial stream;
- Leaving the largest trees per acre of select species (white oak, red oak, sugar maple, white ash and bitternut hickory);
- No harvesting of shagbark hickory; and
- 60 percent canopy coverage must remain throughout the stand after harvest.

***Because of the predominance of forest, Crane forest management drives all other natural systems.***

Photo by Andy King, U.S. Fish and Wildlife Service

Bobcats are trapped, radio-collared and then tracked to determine habitat use, reproduction, and abundance. Currently, biologists target Crane's recent timber sale areas when trapping and have successfully radio-collared 14 bobcats to date.

Crane is home to two pairs of bald eagles, (on the federal threatened list). Until 1991, bald eagles had been unsuccessful in nesting in Indiana since 1897 mainly due to of loss of habitat and decreased reproduction due to pesticides, such as dichlorodiphenyl-trichloroethane (DDT). However, two eagles were brought to Indiana in 1987 from Wisconsin and released several miles northeast of Crane. Eventually, they took over a nest built in 1988 by another pair of eagles in the Lake Greenwood area at Crane. The second pair of eagles has a nest on Lake Gallimore. In 1996, two of the 15 nestling pairs of eagles in Indiana were located at Crane and have raised a total of 22 young eagles to date. Bald eagle nesting is monitored every year and the young eagles are banded with leg identification tags to help track their movements.

The Indiana Bat *(Myotis sodalist)*, a federal endangered species, is a medium sized bat that likes to crawl up the flaking bark of the shagbark hickory tree and roost during the summer months. These creatures are on the decline because of their low birth rate, usually one offspring per year. It takes up to 37 days for the young bat to fly. Bugs are the primary diet of these bats—if their food supply is limited due to pesticide use, this may threaten the health of the bat. Currently, one program affixes bands to the wing of the Indiana Bat that will enable researchers to keep track of individuals and provide important information upon recapture and recovery.

## CONCLUSION

The goals of Crane's natural resource and forestry programs is to provide the maximum benefit from the land to the largest number of people and still provide the protection necessary to conserve the resources and allow for the accomplishment of the primary military mission. Achieving the goals becomes more important as the nation's population continues to grow and wise use of the land becomes critical to our strength in future years.

For more information on Crane programs, visit www.crane.navy.mil.

Two large male turkeys (Toms) strut across a gravel road looking for a potential mate.

## CONTACT

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